

REMARKS

Claims 1-20 were pending and under consideration.

In the Office Action of November 30, 2001, the Examiner rejected claims 1-20 under 35 USC 112(2), rejected claims 1-9, 11, 14-16, and 18-19 under 35 USC 103(a), and rejected 5 claims 10, 12-13, 17, and 20 under 35 USC 103(a).

In response, claims 1-20 were amended. Claims 1-20 remain pending.

I. Amendment to Specification

The Examiner recognized that H in claim 5 erroneously was not defined (Office Action page 2, section 2.b.) Applicants amended the specification to correct this error and 10 make it clear that H in terms of pencil hardness is stated in JIS S 6005, where JIS S 6005 corresponds to ISO 9177-2 and ISO 9177-3.

II. 35 USC 112(2): Claims 1-20

The Examiner rejected claims 1-20 under 35 USC 112(2) as including indefinite language in claims 1, 5, 8, and 17.

15 Since Applicants has made the appropriate changes as noted, Applicants respectfully requests that the Examiner withdraw the rejection to the claims.

III. 35 USC 103(a)

A. Claims 1-9, 11, 14-16, and 18-19

The Examiner rejected claims 1-9, 11, 14-16, and 18-19 under 35 USC 103(a) as 20 being obvious over Kondo (U.S. 5,536,425).

1. Kondo is not analogous prior art

Applicant respectfully disagrees that Kondo is analogous prior art under 35 USC 103(a).

Applicant's field of endeavor relates to the purpose of providing a disc-shaped optical recording medium in which scratches or deposition of dust and dirt on the disc surface may be inhibited to reduce the recording and/or reproducing errors. (Specification at page 4, lines 1-3) Kondo's field of endeavor relates to the purpose of providing a coating-type or a metal thin film-type magnetic recording medium (Kondo Abstract) having good runnability, wear resistance, and durability (Kondo col. 2, lines 3-7) Since Kondo teaches a different purpose, a different medium, and a different structure that operates under different conditions than those of the claimed invention, Kondo is not in the field of Applicants' field of endeavor.

In addition to the above, a skilled person would not reasonably have expected to solve the problem of recording and/or reproducing errors due to scratches or deposition of dust and dirt on an optical disc surface by considering a reference dealing with runnability, wear resistance, and durability in a coating-type or a metal thin film-type magnetic recording medium. Thus, Kondo would not logically have commended itself to Applicants' attention in considering Applicants' problem. Accordingly, Kondo is not analogous prior art under 35 USC 103(a). Applicants respectfully request that the Examiner withdraw the rejection to the claims.

2. Merits

Applicants disagree that Kondo teaches or suggests the subject matter of the claims.

Claim 1 recites:

a recording portion formed on ... the support and a light transmitting layer formed on the recording portion, wherein the light transmitting layer comprises a surface that is configured to receive and transmit illuminating light to the recording portion to record and/or reproduce signals

The Examiner presents a support made of glass to teach the above subject matter.

app not specified

However, the claimed light transmitting layer is a layer that is separated from the support by the recording portion. Thus, Kondo neither teaches nor suggests the above subject matter.

Claim 2 recites:

5 wherein the terminal carboxylic groups are represented by both formula 1 and formula 2.

Kondo neither teaches nor suggests the above subject matter.

Claim 3 recites:

wherein the light transmitting layer has a thickness t of 10 to 177 μm .

10 As indicated in the specification at page 18, lines 5-8, the thickness t of the light transmitting layer 4 may be set to 10 to 177 μm . This range works to accommodate the wavelength range from the red laser light in current use to the blue laser light, which will be used in future.

15 A skilled person optimizing the teachings of Kondo would not discover the above range since Kondo does not address the use of light or laser light in reading/recording. Thus, Kondo neither teaches nor suggests the above subject matter.

Claim 4 recites:

wherein the light transmitting layer satisfies the relationship: $|\Delta t| \leq 5.26 \times (\lambda/NA^4)$
 μm

20 A skilled person optimizing the teachings of Kondo would not discover the above relationship since Kondo does not address either numerical aperture (NA) or wavelength (λ). Thus, Kondo neither teaches nor suggests the above subject matter.

Claim 5 recites:

wherein a surface hardness of that side of the optical recording medium having the amine salt is not less than H in terms of pencil hardness, where H in terms of pencil hardness is stated in an industry standard.

5 A skilled person optimizing the teachings of Kondo would not discover the above relationship since Kondo does not address hardness of that side of an optical recording medium that receives light. Thus, Kondo neither teaches nor suggests the above subject matter.

Claim 6 recites:

10 wherein a surface resistance of that side of the optical recording medium having the amine salt is not larger than $10^{13}\Omega$.

Although Kondo addresses wear resistance, Kondo does not address surface resistance in terms of ohms. Thus, a skilled person optimizing the teachings of Kondo would not discover the above relationship. Accordingly, Kondo neither teaches nor suggests the above subject matter.

Claim 7 depends from claim 1.

Claim 8 recites:

wherein a light-transmitting surface layer is formed between the light transmitting layer and the amine salt compound.

20 Kondo neither teaches nor suggests the above subject matter.

Claim 9 recites:

wherein the light-transmitting surface layer is formed of an inorganic material.

Kondo neither teaches nor suggests the above subject matter.

Claim 11 and claim 14 recite:

25 wherein the light-transmitting surface layer ... has a thickness of 1 to 200 nm.

The recited range is critical. As stated in the specification at page 9, lines 1-5:

If, in the optical disc 1, the thickness of the surface layer 5 is less than 1 nm, it becomes difficult to prevent damage of the surface layer 5 due to contact with the objective lens. On the other hand, if the thickness of the surface layer 5 exceeds 200 nm, the working distance is increased to render it difficult to achieve high recording density.

Kondo neither teaches nor suggests the claimed critical range.

Claim 15 depends from claim 8.

Claim 16 recites:

wherein the light-transmitting surface layer is formed by spin coating to a thickness of 0.1 to 10 μm .

The recited range is critical. As stated in the specification at page 14, lines 13-17:

If the surface layer 5 is of a thickness thicker than 10 μm , thickness variations tend to be produced in the surface layer 5. If the surface layer 5 is thinner than 0.1 μm , it is difficult to improve the surface hardness of the optical disc 1 sufficiently. If the surface layer 5 has the thickness of 0.1 to 10 μm , the optical disc 1 can be improved in surface hardness without producing thickness variations.

Kondo neither teaches nor suggests the claimed critical range.

Claim 18 recites:

wherein a surface tension of the light-transmitting surface layer is set to a value that is smaller than a critical surface tension of the light transmitting layer.

The recited value is critical. As stated in the specification at page 15, lines 5-9:

If the surface layer 5 is formed of a material having a surface tension lower than the critical surface tension of the light transmitting layer 4, it is

possible to prevent the wetting between the light transmitting layer 4 and the surface layer 5 to maintain adhesion between the light transmitting layer 4 and the surface layer 5.

Kondo neither teaches nor suggests the claimed critical valve.

5 **Claim 19** recites:

wherein a moisture absorption ratio of the light-transmitting surface layer is set to be higher than a moisture absorption ratio of the light transmitting layer.

The recited relationship is critical as indicated in the specification at page 15, lines 10-20.

10 Kondo neither teaches nor suggests the claimed critical range.

For the above reasons, Applicants respectfully request that the Examiner withdraw the rejection to the claims.

B. Claims 10, 12-13, 17, and 20

The Examiner rejected claims 10, 12-13, 17, and 20 under 35 USC 103(a) as being obvious over Kondo (U.S. 5,536,425) in view of Akutsu (U.S. 5,864,357)

Applicant respectfully disagrees that Akutsu is analogous prior art under 35 USC 103(a).

Applicant's field of endeavor relates to the purpose of providing a disc-shaped optical recording medium in which scratches or deposition of dust and dirt on the disc surface may

20 be inhibited to reduce the recording and/or reproducing errors. (Specification at page 4, lines

Ans A
1-3) Akutsu's field of endeavor relates to the purpose of providing a thermal printing recording apparatus (Akutsu col. 1, lines 9-13) to perform thermal printing at a resolution as high as not less than 600 DPI and at a higher rate than the prior art (Akutsu col. 2, lines 25-28) Since Akutsu teaches a different purpose, a different medium, and a different structure

that operates under different conditions than those of the claimed invention, Akutsu is not in Applicants' field of endeavor.

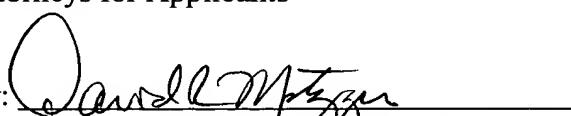
In addition to the above, a skilled person would not reasonably have expected to solve the problem of recording and/or reproducing errors due to scratches or deposition of dust and dirt on an optical disc surface by considering a reference dealing with thermal printing. Thus, Akutsu would not logically have commended itself to Applicants' attention in considering Applicants' problem. Accordingly, Akutsu is not analogous prior art under 35 USC 103(a).
Applicants respectfully request that the Examiner withdraw the rejection to the claims.

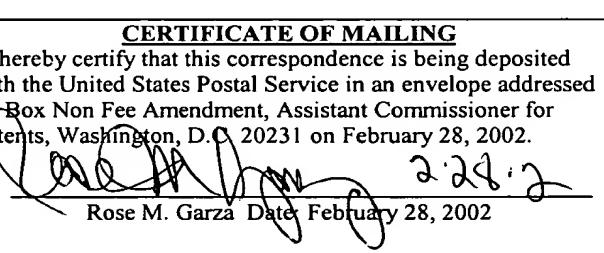
IV. Conclusion

In view of the foregoing, it is believed that the claims now pending are in condition for allowance. Such action is earnestly solicited at the earliest possible date. If the Examiner believes that a conference would be of value in expediting the prosecution of this application, the Examiner is invited to telephone the undersigned counsel to arrange for such a conference.

Respectfully submitted,
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**V. APPENDIX TO RESPONSE "B" TO NON FINAL OFFICE ACTION:
VERSION WITH MARKINGS TO SHOW CHANGES MADE**

IN THE SPECIFICATION

The paragraph beginning at page 9, line 6:

In addition, the surface hardness of the surface layer 5 is desirably not less than H in
5 terms of pencil hardness. H in terms of pencil hardness is stated in JIS (Japanese Industry
Standard) S 6005 (Leads for mechanical pencils), where JIS S 6005 corresponds to ISO
(International Organization for Standardization) 9177-2 (Black leads in mechanical pencils --
Classification and dimensions) and ISO 9177-3 (Black leads in mechanical pencils -- Bending
strengths of HB leads). The results of a collision test against a pickup have indicated that, if
10 the light incident side surface of the optical disc 1 has a pencil hardness not less than H, the
optical disc is not damaged on collision against the objective lens. It is furthermore desirable
that the surface hardness of the surface layer 5 is not less than 2H in terms of pencil hardness.
This effectively prohibits the optical disc 1 from being damaged due to contact with the
objective lens.

15

CLAIMS

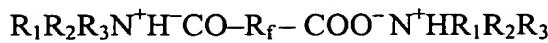
1. (Amended Once) An-A disc-shaped optical recording medium, comprising:
a support having at least two major surfaces;
a recording portion formed on one of the major surfaces of the support for recording
20 signals thereon; and
a light transmitting layer formed on said the recording portion; wherein the light
transmitting layer comprises a surface that is configured to receive and transmit illuminating
light to the recording portion to record and/or reproduce signals characterised in that signals
are recorded and/or reproduced by illuminating light from the side of said light transmitting
25 layer; and in that

an amine salt compound held on the surface of the light transmitting layer, wherein
the amine salt compound is a compound of perfluoropolyether having terminal carboxylic
groups, represented by the chemical formulas (1) and/or (2):



5

(formula 1)



(formula 2)

where R_f denotes a perfluoropolyether group and R_1 , R_2 and R_3 denote hydrogen or a
hydrocarbon group, ~~is held on the surface of said side illuminated by light.~~

10

2. (Amended Once) The optical recording medium according to claim 1, wherein the
terminal carboxylic groups are represented by both formula 1 and formula 2, and wherein at
least one of R_1 , R_2 and R_3 in the formulas (1) and (2) is a long-chain hydrocarbon having 10
or more carbon atoms.

15

3. (Amended Once) The optical recording medium according to claim 1, wherein said
the light transmitting layer has a thickness t of 10 to 177 μm .

20 4. (Amended Once) The optical recording medium according to claim 1, wherein said
the light transmitting layer satisfies the relationship:

$$|\Delta t| \leq 5.26 \times (\lambda / NA^4) \mu m,$$

wherein Δt is thickness variation of the light transmitting layer and NA and λ are the
numerical aperture and the wavelength of the ~~optical system recording and/or reproducing~~
~~said optical recording medium.~~

25

5. (Amended Once) The optical recording medium according to claim 1 wherein, ~~the-a~~
surface hardness of ~~the~~that side of the optical recording medium having the amine salt
illuminated by light is not less than H in terms of the pencil hardness, where H in terms of
pencil hardness is stated in an industry standard.

5

6. (Amended Once) The optical recording medium according to claim 1, wherein ~~the-a~~
surface resistance of ~~the~~that side of the optical recording medium having the amine salt
illuminated by light is not larger than $10^{13}\Omega$.

10 7. (Amended Once) The optical recording medium according to claim 1, wherein the
dynamic frictional coefficient of ~~the~~that side of the optical recording medium having the
amine salt illuminated by light is not higher than 0.3.

15 8. (Amended Once) The optical recording medium according to claim 1, wherein a
light-transmitting surface layer is formed ~~on-between~~ the light transmitting layer and the
amine salt compound.

9. (Amended Once) The optical recording medium according to claim 8, wherein said
the light-transmitting surface layer is formed of an inorganic material.

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10. (Amended Once) The optical recording medium according to claim 9, wherein
~~said~~the inorganic material is one of SiNx, SiC, and SiOx.

25 11. (Amended Once) The optical recording medium according to claim 9, wherein
~~said~~the light-transmitting surface layer is formed by at least one of sputtering or spin-coating
and has a thickness of 1 to 200 nm.

12. (Amended Once) The optical recording medium according to claim 8, wherein
~~said the light-transmitting~~ surface layer is formed of an electrically conductive inorganic material.

5

13. (Amended Once) The optical recording medium according to claim 12, wherein
~~said the~~ inorganic material is at least one of indium oxide or tin oxide, either alone or in composition.

10 14. (Amended Once) The optical recording medium according to claim 12, wherein
~~said the light-transmitting~~ surface layer is formed by at least one of sputtering or spin coating to a thickness of 1 to 200 nm.

15 15. (Amended Once) The optical recording medium according to claim 8, wherein
~~said the light-transmitting~~ surface layer is formed of an organic resin.

16. (Amended Once) The optical recording medium according to claim 15, wherein
~~said the light-transmitting~~ surface layer is formed by spin coating to a thickness of 0.1 to 10 μm .

20

17. (Amended Once) The optical recording medium according to claim 15, wherein
~~said the light-transmitting~~ surface layer is formed of an organic resin admixed with powders of oxides of at least one of metals In, Sn, and Sn-Zn, and wherein ~~said the light-transmitting~~ surface layer is formed by spin coating to a thickness of 0.1 to 100 μm .

25

18. (Amended Once) The optical recording medium according to claim 15, wherein
the-a surface tension of said-the light-transmitting surface layer is selected-set to a value that
is smaller than the-a critical surface tension of said-the light transmitting layer.
- 5 19. (Amended Once) The optical recording medium according to claim 15, wherein
the-a moisture absorption ratio of said-the light-transmitting surface layer is selected-set to be
higher than that-a moisture absorption ratio of said-the light transmitting layer.
- 10 20. (Amended Once) The optical recording medium according to claim 8, wherein
said-the light-transmitting surface layer is electrically conductive.